

# GCT

## (Groundcrew Coordination Training)



School of Aviation Safety    Naval Safety Center  
Naval Postgraduate School NAS Norfolk, Virginia  
Monterey, California



# Warning!



**CONSIDER THE POSSIBLE  
CONSEQUENCES IF YOU ARE  
CARELESS IN YOUR WORK**



# Groundcrew Coordination Training



“Managing Risk and  
Maximizing Effectiveness”

# Groundcrew Coordination Training (GCT) Agenda



- Welcome/Remarks
- Introduction to GCT
- Behavioral Skills
- Case Studies

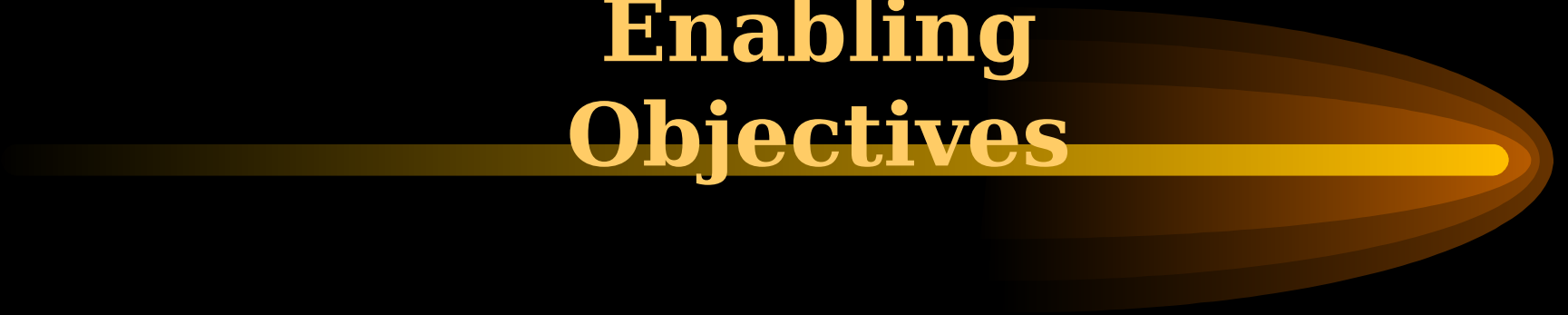
# GCT



**Terminal Objective:** Upon completion of the GCT program, the student will achieve a better understanding of how crew coordination and utilization of the seven behavioral skills can play a valuable role in preventing ramp mishaps.

# GCT

## Enabling Objectives



- Gain an understanding of what GCT is and why it is important.
- Discuss the seven behavioral skills associated with GCT and define them accurately.
- Given an aircraft ground mishap, be able to evaluate its causes, and determine how GCT could be used to avoid them in the future.

# GCT

## Motivating Statement

GROUNDCREW COORDINATION TRAINING is a course of instruction developed from the Navy's Aircrew Coordination Training (ACT) program. During the 80's, the Navy conducted a research effort to identify common factors in crew resource management mishaps. They identified seven behavioral skills that, when not used, were associated with aviation mishaps. An analysis of ramp and maintenance mishaps show that a lack of crew coordination and behavioral skill use was a major factor.

*As a result, a crew coordination course of instruction was developed specifically for line and maintenance personnel.*

# COMMERCIAL APPLICATIONS

Continental Airlines initiated a Crew Coordination Concepts (CCC) program “to equip all maintenance personnel with the skill to use all resources to improve safety and efficiency.” The two day workshop covers organizational routines, assertive behavior, leadership styles, stress management, decision-making, and interpersonal skills. The results after the first three years of CCC were remarkable.

- 1200 employees received training (2/3 workforce)

- Maintenance ground damage costs cut by 66%
- Dramatically reduced upward trend in injuries



# GCT

## Definition



### **What is Groundcrew Coordination?**

A process of coordinated action among groundcrew personnel which enable them to interact effectively while performing mission tasks and handling emergencies.

**LEARNING TO ACT AS A  
TEAM!**



**You don't always want to  
catch the wire at night!**

# Team Operations



- Maintenance Activities



- Ramp/Line Activities



- Ordnance/Stores Activities

# GCT

## Importance



### **Why is GCT Training important?**

Good groundcrew coordination can increase mission effectiveness by minimizing crew-preventable errors, maximizing crew resources, and optimizing risk management.

# GCT

## Naval Aviation Importance

**Failure to coordinate was found in:**

- Almost 70% of All Aircraft Ground Mishaps!
- Over 50% of Personal Injury Maintenance Mishaps!
- Almost 50% of All Class A /B Mishaps!



# **We are not alone!**



## **Airlines Worldwide:**

Maintenance problems are the second greatest contributor to onboard fatalities, following controlled flight into terrain (CFIT).

# But What are the Numbers?



## One study of commercial aviation jet accidents found:

- Improper maintenance contributed to 15% of commercial jet accidents.
- 20-30% of engine in-flight shutdowns and 50% of engine-related flight delays/cancellations are caused by maintenance error.
- 48,800 unairworthy aircraft dispatched

***“Risk is inherent in every aspect of our business. The challenge is to reduce or eliminate that risk and preserve our most precious asset.”***  
***Sailor***

**Former CG 2**




# Human Factor Error Causes

## “Dupont’s Dirty Dozen”

- |                                    |                      |
|------------------------------------|----------------------|
| 1) Lack of Communication Resources | 7) Lack of Resources |
| 2) Complacency                     | 8) Pressure          |
| 3) Lack of Knowledge Assertiveness | 9) Lack of           |
| 4) Distraction                     | 10) Stress           |
| 5) Lack of Teamwork                | 11) Lack of          |

# GCT

## Seven Behavioral Skills



- ✓ Decision Making
- ✓ Assertiveness
- ✓ Mission Analysis
- ✓ Communication
- ✓ Leadership
- ✓ Adaptability/Flexibility
- ✓ Situational Awareness



# GCT

## Behavioral Skill Dimensions

- Communication - the ability to clearly and accurately send and acknowledge information and provide useful feedback.
- Assertiveness - the willingness to actively participate and the ability to state and maintain individual position.
- Mission Analysis - the ability to coordinate, allocate, and monitor crew and ramp resources

## Behavioral Skill Dimensions (continued)

- Decision Making - the ability to use logical and sound judgment based on available information
- Situational Awareness - the ability to maintain awareness of what is happening around you as well as your primary task
- Adaptability/Flexibility - the ability to alter courses of action to meet situational demands

# GCT

## Behavioral Skill Dimensions (continued)



- Leadership - the ability to direct and coordinate the activities of others and to stimulate them to work together as a team.

BREAK!



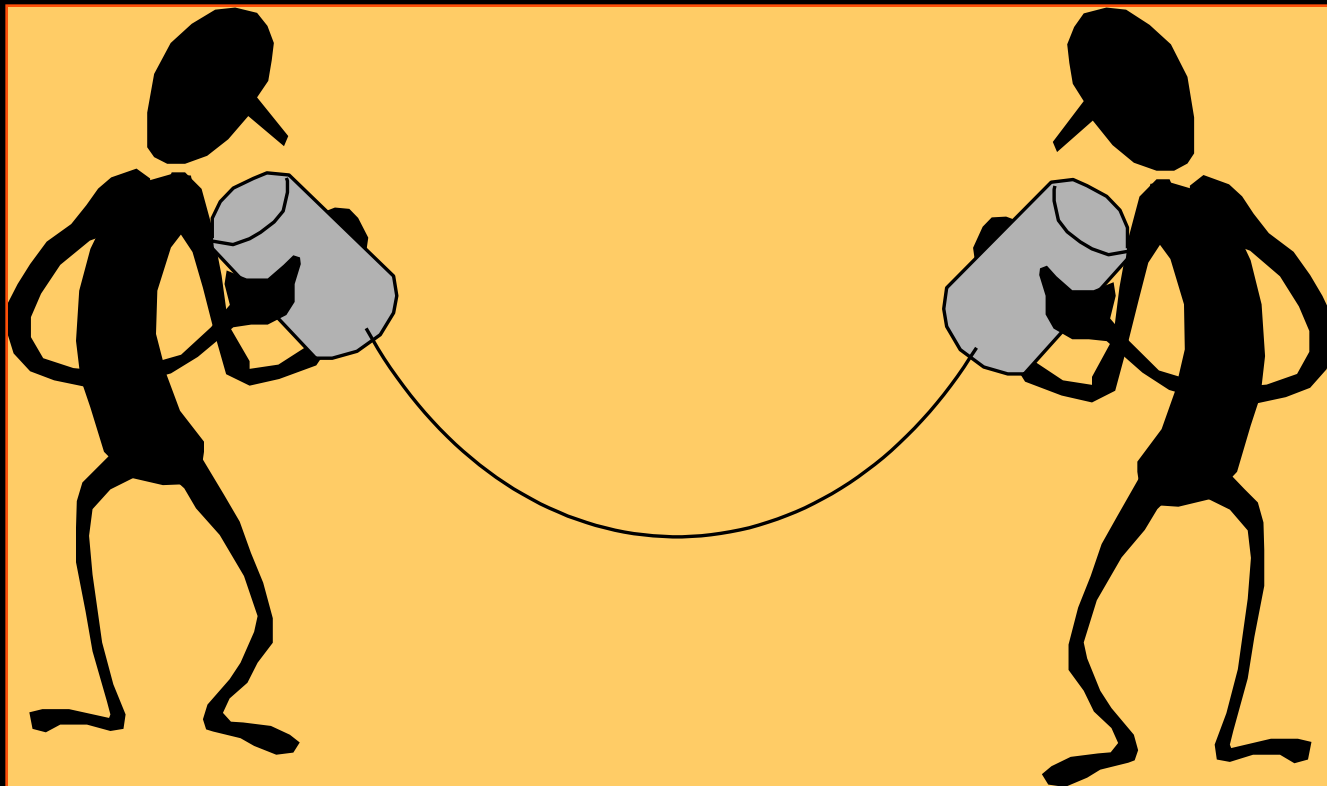
# GCT

**“Safety is built on integrity,  
trust and leadership, created  
and sustained by effective  
communication.”**





# Communicatio n



# Lead Mechanics' Skills Survey

1/3 - "Human relations/dealing with people" was the most challenging part of job

1/3 - "Human relation/dealing with people" was part of job least prepared for!

1/2 - said People/Communication skills are the most important

# University Study of Commercial Airline Maintenance

Face-to-Face

Communication of log book  
write-ups (“gripes”) improves  
mechanics’ troubleshooting and  
reduces repair time.

# BEHAVIORAL SKILL:

## Communication

### Importance



- Conduct Missions Effectively
- Avoid Hazards Leading to Mishaps
- Pass Critical Information Between Crews
- Maintain Crew Situational Awareness

# BEHAVIORAL SKILL: Communication Importance

**Communication failures occur in:**

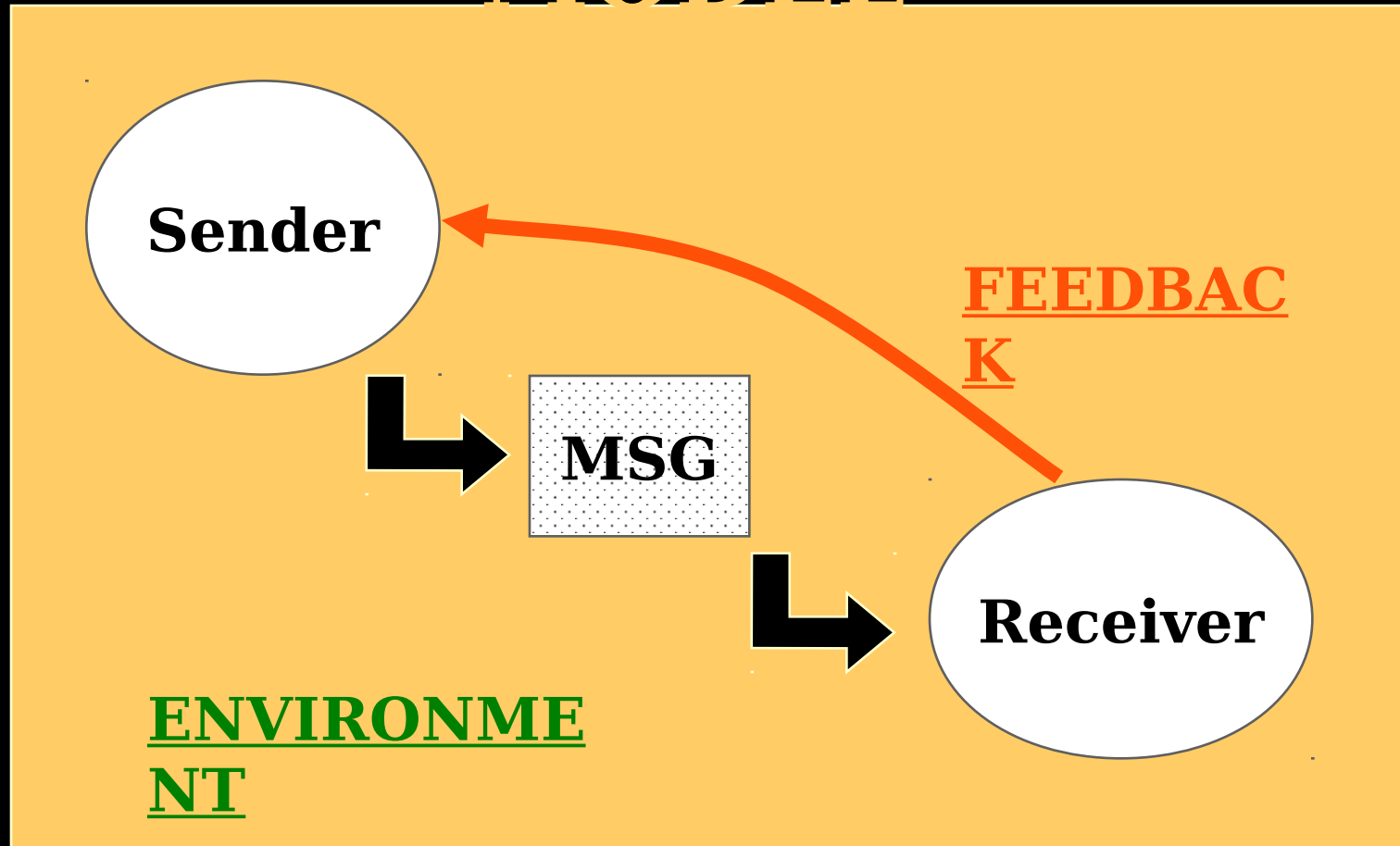
- 49% of Aircraft Ground Mishaps!
- 33% of Personal Injury Mishaps!





**I GUESS WE'RE**

# BASIC COMMUNICATIONS MODEL



# BEHAVIORAL

## SKILL: Communication

### Sender's Responsibilities

- Provide Information as Required
- Provide Information When Asked
- Deliver Information Clearly/Concisely
- Provide Useful and Accurate Information
- Verbalize Plans
- Use Appropriate Non-Verbal

# BEHAVIORAL SKILL:

## Communication

### Receiver's Responsibility

- Acknowledge Communications
- Repeat Information as required
- Paraphrase Information
- Clarify Information
- Provide Useful Feedback

# BEHAVIORAL

## SKILL: Communication Barriers

- Passive Listening
- No/Poor Feedback
- Non-Standard Terms
- Inappropriate Communication Methods
- Vague/Late INFO

# BEHAVIORAL SKILL:

## Communication

### Overcoming Barriers

- Use Active Listening
- Require Feedback
- Use appropriate communication mode
- Use Appropriate Emphasis (decibel level)
- Use Standard Terminology

# BEHAVIORAL SKILL:

## Communication

### Active Listening

#### Don't

Debate

Detour

Preplan

Tune Out  
Language

#### Do

Ask Questions

Use Paraphrasing

Make Eye Contact

Use Positive Body

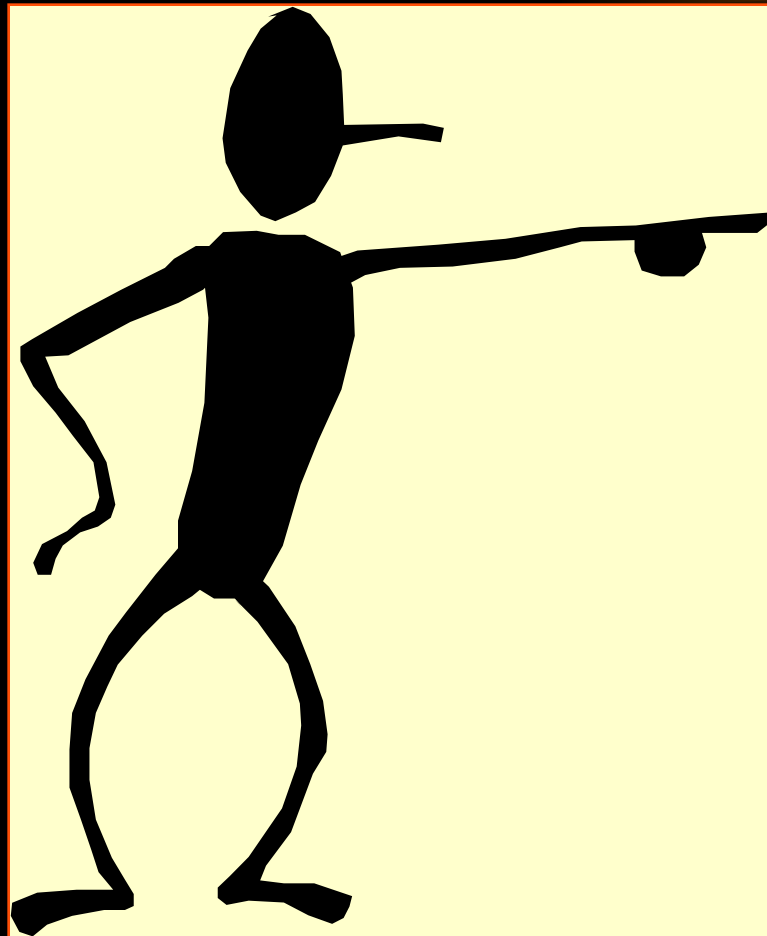


# Fatherless ...



because of a missed  
hand  
signal and a piece of  
tape!

# Assertiveness



# BEHAVIORAL SKILL:

**Assertiveness**

**Encompasses**

- Willingness to Make Decisions
- Demonstrating Initiative/Courage to Act
- Stating/Maintaining Positions Until Completely Convinced by the Facts

# BEHAVIORAL SKILL:

## Assertiveness Importance

Assertiveness failures are found in almost

- 24% of Aviation Ground Mishaps
- 10 % of Personal Injury Mishaps



# BEHAVIORAL SKILL:

## Assertiveness

### Behavior

- Provide Relevant INFO Without Being Asked
- Make Suggestions
- Ask Questions as Necessary
- Confront Ambiguities
- Maintain Position When Challenged
- State Positions on Decisions/Procedures
- Refuse an Unreasonable Request

# BEHAVIORAL SKILL:

## Assertiveness

### Barriers

- Rank differences
- Position Authority
- Lack of Experience/New to Unit
- Coercion
- Lack of Confidence



# BEHAVIORAL SKILL:

## Assertiveness

### Overcoming Barriers

- Get Attention of Receiver
- Use Active Verbs
- State Your Concern
- Offer a Solution
- Recommend Action
- Ask for Feedback

# BEHAVIORAL SKILL:

## Assertiveness

### “Rule of Thumb”

If a disagreement exists, take the most conservative action until more information is available.

# BEHAVIORAL SKILL:

## **Assertiveness Situations Requiring Assertiveness**

- Pre-Mission Brief
- Mission Execution
- Post-Mission Brief

**“Why, for five cents...”**



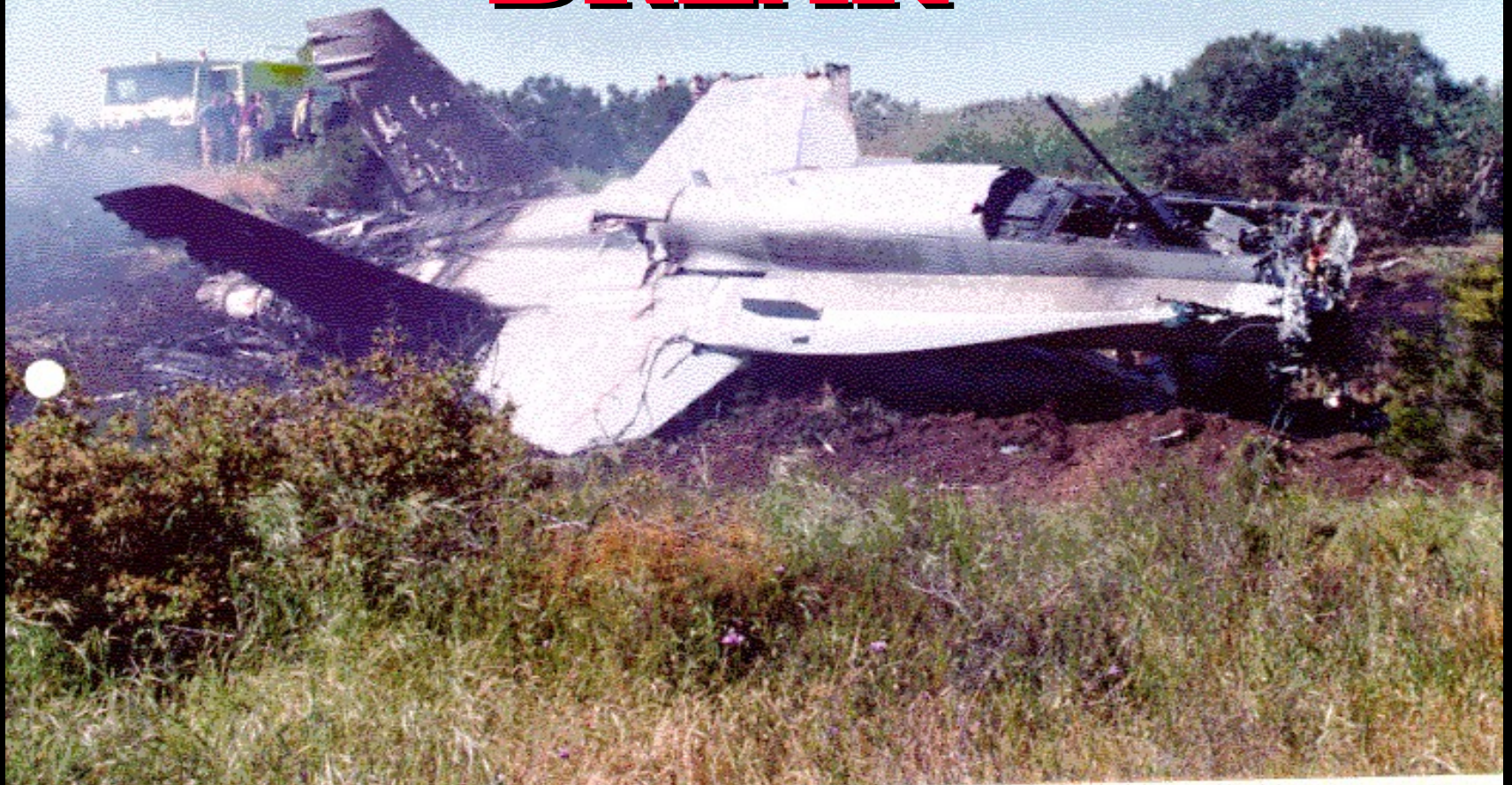


EA6B Prowler

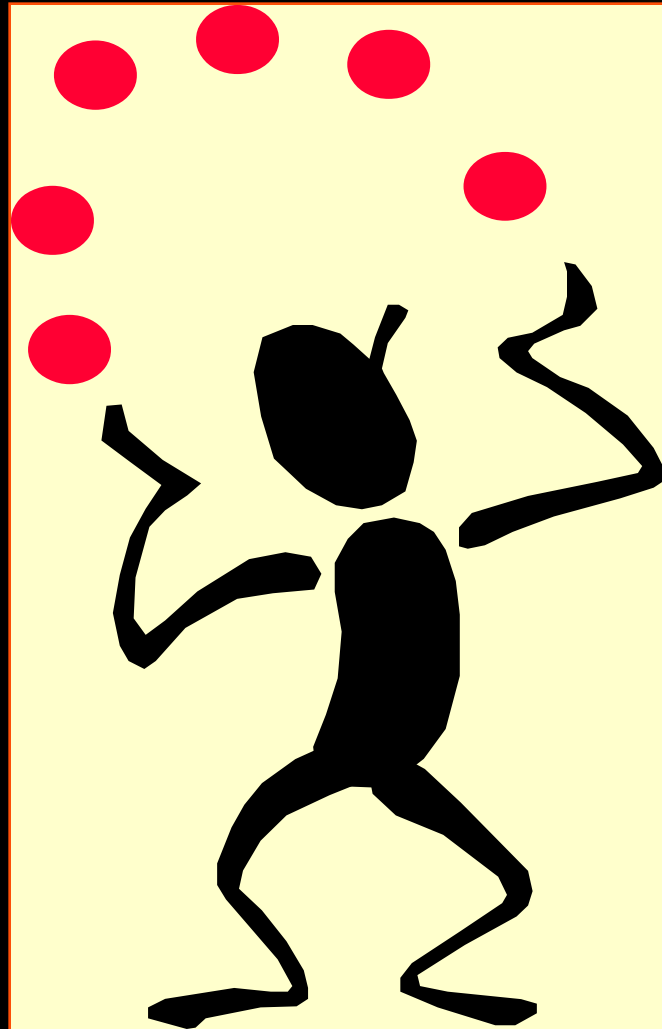
**Real Friends are Assertive**



**“TIME FOR A  
BREAK”**



# Mission Analysis





# BEHAVIORAL SKILL:

## **Mission Analysis Encompasses**

- Organization/Planning for What Will Occur During a Task
- Monitoring the Current Situation
- Reviewing and Providing Feedback on What has Occurred

# **BEHAVIORAL SKILL:**

## **Mission Analysis Importance**

**Mission Analysis failures are  
found in:**

- 52% of Aircraft Ground Mishaps!
- 47% of Personal Injury Mishaps!



**I don't see how  
Mission Analysis could be**

# BEHAVIORAL SKILL:

## Mission Analysis

### Three Stages of Mission Analysis

- (1) Pre-Mission Organization and Planning
  - Briefs are comprehensive, include short/long term plans
  - Briefs set expectations for all crew members
- (2) During Mission Monitoring and Updating
  - Critique and update existing plans
  - Evaluate results of previous decisions
  - Inform crew of changes in mission concept

# BEHAVIORAL SKILL:

## Mission Analysis

### Three Stages of Mission Analysis (continued)

#### (3) Post-Mission Review

- Critique entire mission
- Debrief is interactive
- Provides selective review
- Timely feedback to crew members
- Determine areas for improvement

# BEHAVIORAL SKILL:

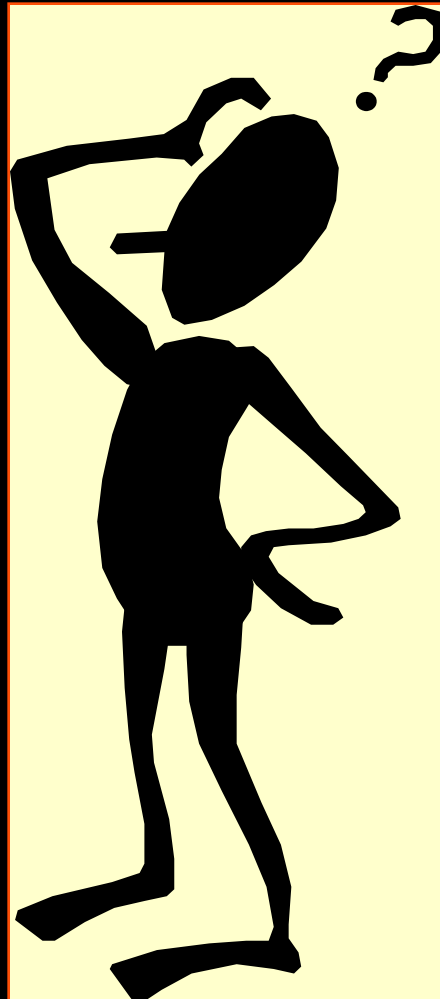
## **Mission Analysis Barriers & Remedies**

- Barriers
  - Time pressure
  - OPs TEMPO
  - Coercion
- Remedies
  - Time management
  - Proper planning
  - Effective delegation



**Who wants to be  
Tied Down  
With Mission  
Analysis?**

# Decision Making





# BEHAVIORAL SKILL: Decision Making Importance

**Decision Making failures occur in:**

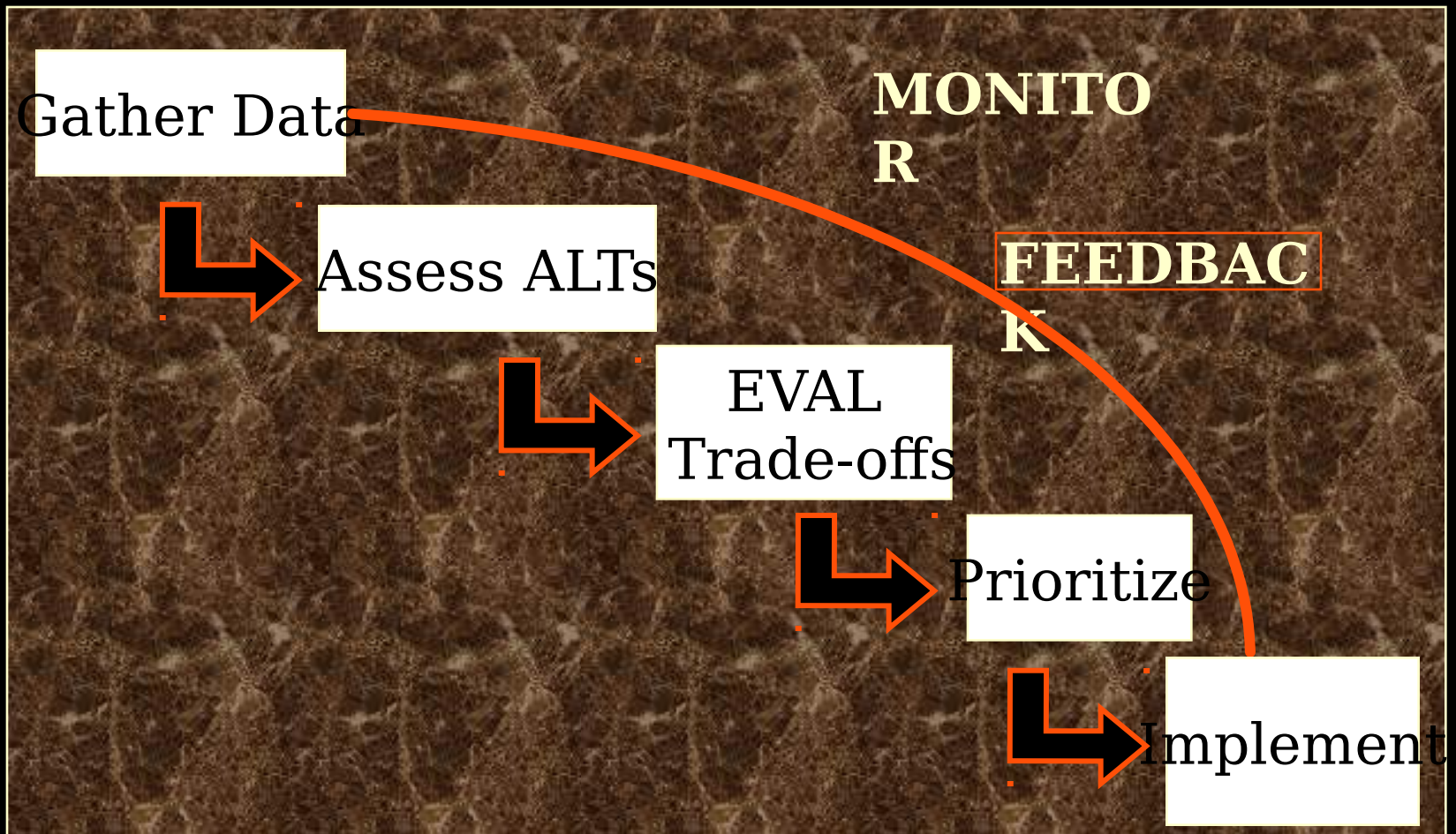
- 11 % of Aircraft Ground Mishaps!
- 7 % of Personal Injury Mishaps!

**“No...I won’t need goggles on this job.”**



# BEHAVIORAL SKILL:

## Decision Making



# BEHAVIORAL SKILL:

## Decision Making

### Factors Facilitating Decision Making

- Employing Teamwork
- Allocating Ample Time
- Anticipating the Consequences
- Disseminating Decisions and Rationale
- Evaluating the Decision

# BEHAVIORAL SKILL:

## Decision Making

### Decision Making vs. Trouble Shooting

- Identify all symptoms
- Make a hypothesis
- Test!
- Apply appropriate remedies

# BEHAVIORAL SKILL:

## Decision Making Barriers

- Time demand/constraints
- Inaccurate/Ambiguous Information
- Pressure to Perform
- Rank Differences/Gradient

# BEHAVIORAL SKILL:

## Decision Making Remedies

- Use SOPs and select best decision with available information
- Cross-check information
- Evaluate rationale for decision
- Use assertive behavior

# BEHAVIORAL SKILL:

## Decision Making Risk Assessment Decision Strategy

- Once a hazard is detected use **A-E-S-O-P** Model
- A-ircraft, E-nvironment, S-ituation, O-perations,  
& P-eople
- The analysis considers the crew's ability to cope with changes and



# TWO BANGS FOR THE BUCK?



# A Couple of BAD

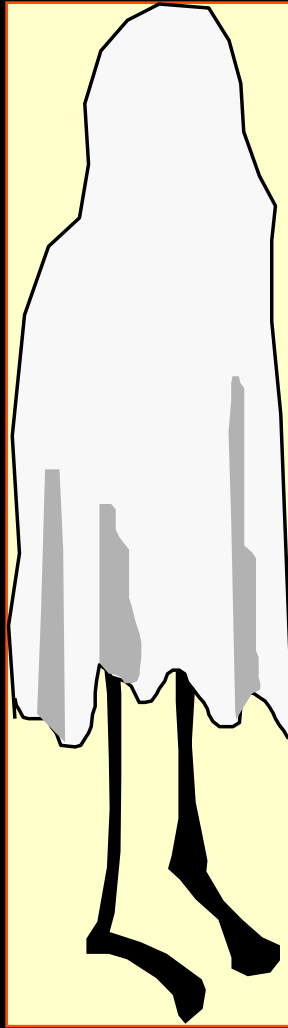




# BREAK!



# Situational Awareness



# BEHAVIORAL SKILL:

## **Situational Awareness Encompasses the Ability to:**

- Identify sources of hazards/problems
- Extract/interpret essential information
- Maintain an accurate perception of your environment
- Detect situations requiring action

# **BEHAVIORAL SKILL:**

## **Situational Awareness Importance**

**Situational Awareness failures  
were found in:**

- 51% of Aviation Ground Mishaps!
- 68% of Personal Injury Mishaps!



# Situational Awareness . . .



**versus propellers!**



# BEHAVIORAL SKILL:

## Situational Awareness Requires Knowing

- Who is responsible for specific activities
- What is happening at any given moment
- When events are supposed to occur
- Where the equipment and people are located/heading

# BEHAVIORAL SKILL:

## Situational Awareness

### Maintaining / Increasing Awareness

- Detect and comment on deviations
- Provide timely information
- Identify potential hazards/problems
- Monitor task performance and mission status

# BEHAVIORAL SKILL:

## **Situational Awareness Maintaining / Increasing Awareness “PAC Us Up”\_**

- P-repare through a comprehensive brief
- A-cknowledge potential problems
- C-ommunicate
- Us-e all information sources
- Up-date and revise mission status

# BEHAVIORAL SKILL:

## Situational Awareness

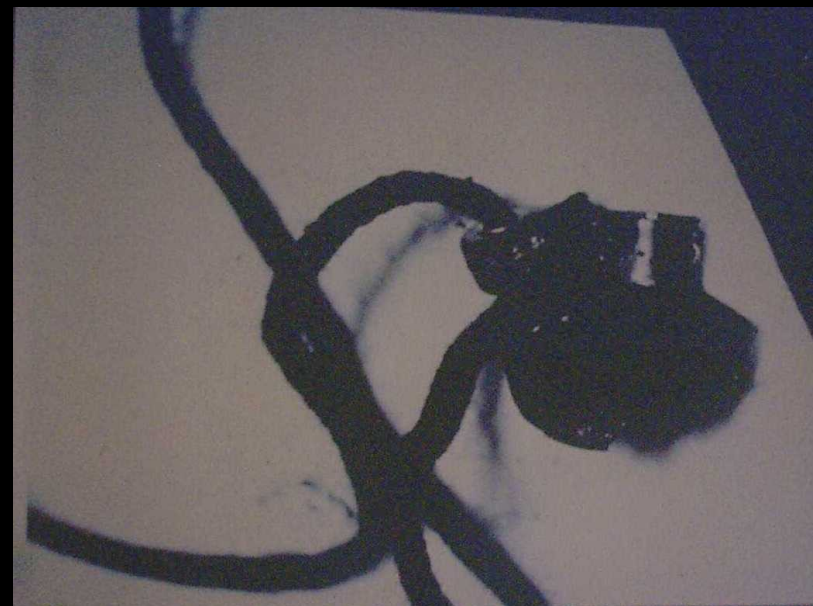
### Barriers

- Insufficient Communication
- Fatigue/Stress
- Task Overload/Underload
- “Groupthink” Mindset
- “Press-on” Mentality
- Degraded Operating Conditions

# **BEHAVIORAL SKILL:**

## **Situational Awareness Remedies**

- Actively question/evaluate
- Use assertive behavior when necessary
- Analyze/monitor situation continuously
- Update and revise mission profiles



**It only takes a second...**

# Adaptability/Flexibility





# BEHAVIORAL SKILL:

## Adaptability/Flexibility Importance

Adaptability/Flexibility failures occur in

- 8 % of Aircraft Ground Mishaps!
- 5 % of Personal Injury Mishaps!

ell, at least they're flexib





**Adaptability/Flexibility  
is for No Loads**

# BEHAVIORAL SKILL:

## Adaptability/Flexibility

### Example Behaviors

- Alter behavior to meet situational demands
- Be open and receptive to other ideas
- Help others when necessary
- Employ constructive behavior under pressure
- Adapt to internal/external environment changes

# BEHAVIORAL SKILL:

**Adaptability/Flexibility**

**Situations Requiring**

**Adaptability/Flexibility**

- When unbriefed situations arise
- When a routine mission becomes an emergency situation
- When changes occur
- When a crew member is injured/incapacitated
- When crew interactions are strained

# BEHAVIORAL SKILL:

**Adaptability/Flexibility**

**Procedure for Critical**

**Decisions**

**S-T-O-P**

- **S-top**
- **T-ake a reading of the situation and conduct an...**
- **O-perational Evaluation**
- **P-ropose a response**

# BEHAVIORAL SKILL:

## Adaptability/Flexibility

### Barriers

- Confusion
- Peer Pressure
- Groupthink Mindset
- Mission Schedule
- Personal Rigidity
- New/Unusual Situations



# BEHAVIORAL SKILL:

## Adaptability/Flexibility

### Overcoming Barriers

- Anticipate Problems
- Recognize Change/Abnormality
- Determine if SOPs Are Appropriate
- Take Alternative Actions if Necessary
- Gain Support for Actions to be Taken
- Provide and Ask for Assistance
- Interact Constructively With Others

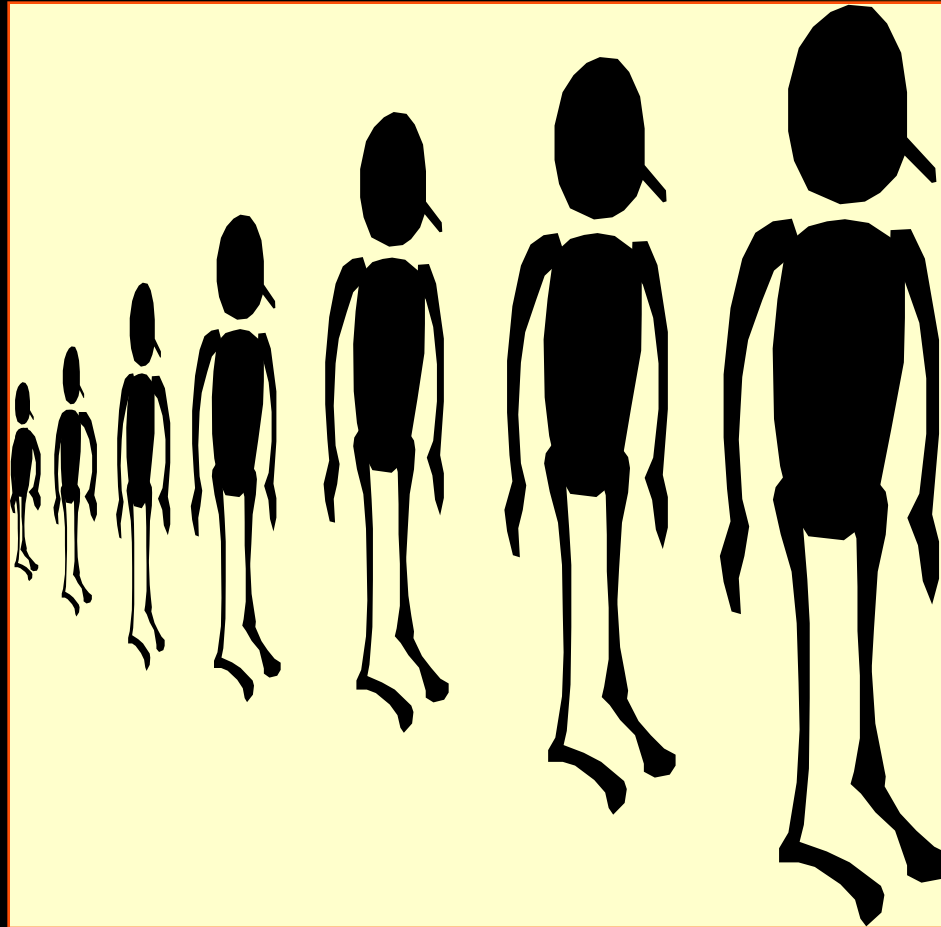


**You have to be flexible  
to work on these birds!**



**HOW ABOUT A BREAK  
?**

# Leadership





# LEADERS

VS.



# Airman Apprentice

# BEHAVIORAL SKILL:

## Leadership

### Types of Leadership

- Designated - Leadership by authority, position, rank, or title
  - formal/permanent
- Functional - Leadership by knowledge or experience
  - informal/temporary

# BEHAVIORAL SKILL:

## Leadership Responsibilities

- Direct and Coordinate Crew Activities
- Delegate Tasks to Crew Members
- Ensure Crew Understands Expectations
- Focus Attention on Critical Aspects of Situations
- Adapt to changes



# BEHAVIORAL SKILL:

## Leadership

### Responsibilities (continued)

- Keep Crew Informed of Mission Information
- Ask Crew Members for Relevant Mission Information
- Provide Feedback to Crew on their Performance
- Create and Maintain a Professional Atmosphere

# BEHAVIORAL SKILL:

## Leadership Importance

**Poor Leadership was found in:**

- 17% of Aircraft Ground Mishaps!
- 31% of Personal Injury Mishaps!

# BEHAVIORAL SKILL:

## Leadership Barriers

- Micro-management
- Poor Interpersonal Skills
- Inexperience
- Pressure
- New/Unusual Situations
- Rigidity

# BEHAVIORAL SKILL:

## Leadership

## Overcoming Barriers

- Make suggestions (don't always dictate)
- Encourage crew to participate
- Lead by inspiration
- Provide feedback to the crew



# **Watered down Leadership**

**leaders  
out to get  
you?**





**“People are a lot more important than equipment. Don’t they deserve the same preventive, vice corrective, approach?”**

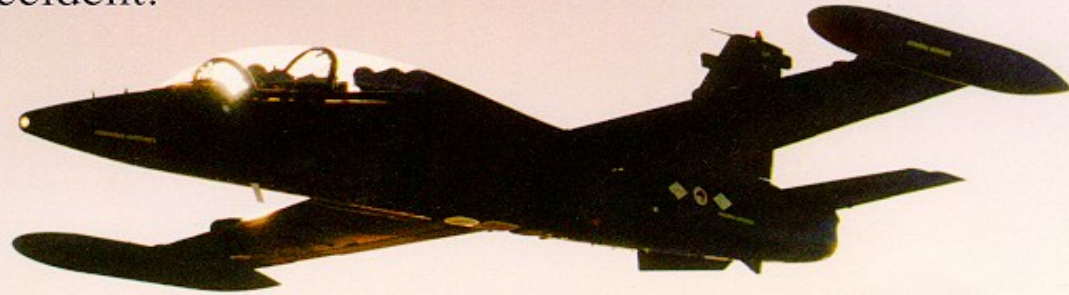
**It is time for all of us to do a little preventive work.”**





# FAMOUS LAST WORDS

If any of these 'famous last words' cross your lips, beware - they often precede a serious accident:



'There's a quicker way to do it.'

'It looks strong enough to take my weight.'

'No thanks, I can manage it myself.'

'One of these days I'm going to get this checked.'

'I can do this with my eyes shut.'

'I don't need the manual, I know how it works.'

'I'll tidy that up when I've finished.'

'You needn't switch the power off if you know what you're doing.'

'This is how we've always done it.'

'I know you shouldn't do it this way, but...'

'Gloves make my hands sweat too much.'

'I never take my wedding ring off.'

'Rules are made to be broken.'

'Just watch this.'